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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/971,763	10/09/2001	Moo-youl Kim	P56598	4212

7590 08/22/2002

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EXAMINER

BROOKE, MICHAEL S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 08/22/2002

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/971,763

Applicant(s)

KIM ET AL.

Examiner

Michael S. Brooke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the heaters being disposed on the underside of the nozzle plate must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The instant spec. does not provided antecedent basis for the claimed limitation of the heaters being disposed on the underside of the nozzle plate.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4-9, 11-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (5,841,452) in view of Mori (JP 05-131631).

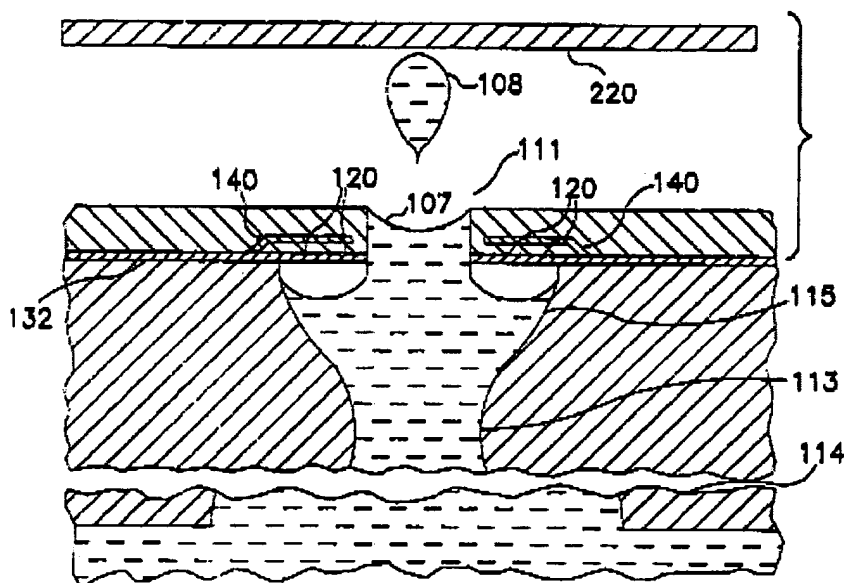


FIG. 17

Silverbrook teaches (Fig. 17, above) an ink jet print head comprising a base plate (130), which is perforated by an hour-glass shaped structure having a hemispherical shaped top portion that is filled with ink, a nozzle plate that is mounted on the base plate and is perforated by a plurality of orifices in communication with their respective chambers, a plurality of dough-nut shaped heaters (120) disposed on the underside of

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the nozzle plate and surrounding each nozzle and a plurality of ink inlet passages (113), which supply ink from a reservoir to the hemispherical hour-glass shaped chamber. As can be seen Fig. 18 (which is a reverse structure of Fig. 17), each hemispherical chamber is connected to a funnel shaped chamber (489). Since Fig. 18 is a reverse of Fig. 17, these funnel shaped chambers would be found beneath the hemispherical chambers of Fig. 17.

Silverbrook teaches the claimed invention with the exception of the ink inlet passages each having a plurality of grooves formed at an inner wall.

Mori teaches an ink jet print head having a plurality of ink passages (8). each of the passages has a plurality of grooves (12) formed therein for the purpose of smoothing the flow of the ink through the passage in order to increase ink jet speed.

It would have been obvious to one of ordinary skill in the inkjet art at the time the invention was made to have provided Silverbrook with an ink inlet passage having a plurality of grooves formed in its walls for the purpose of smoothing the flow of the ink through the passage in order to increase ink jet speed, as taught by Mori.

6. Claims 3, 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (5,841,452) in view of Mori (JP 05-131631), as applied to claims 1, 2, 4-9, 11-16 and 18-20 above, and further in view of Cielo et al. (4,164,745).

Silverbrook, as modified, teaches the claimed invention with the exception of each of the heaters being installed on the outer side of the nozzle plate.

Cielo et al. teaches (Figs. 1 and 7) an ink jet print which used an annular heater (13) to eject ink. Fig. 1 illustrates that the heater may be placed on the outer side of the

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nozzle plate, while Fig. 7 illustrates that the heater may be placed on the under side of the nozzle plate. Therefore this reference teaches that these two heater position are art recognized equivalents for the purpose of ejecting ink. Because these two positions were art recognized equivalents at the time the invention was, one of ordinary skill in the ink jet art would have found it obvious to have substituted a heater on the outer portion of the nozzle plate for a heater on the underside of the nozzle plate for the purpose of ejecting ink in a known alternative manner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is 703-305-0262. The examiner can normally be reached on M-F 5:30-2:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

msb

Michael S. Brooke
Examiner
Art Unit 2853

MSB
August 15, 2002


CRAIG HALLACHER
PRIMARY EXAMINER